CLAIMS

We claim:

1. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a wild type herpes virus,

b) measuring IC_{50} of the same compound that inhibits a binding domain mutant herpes virus which is the same strain as the wild type herpes virus,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step b is at least 3 times greater than the IC_{50} of step a.

2. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a binding domain mutant herpes virus,

b) measuring IC_{50} of the same compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes virus,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step a is at least 3 times greater than the IC_{50} of step b.

3. The method of claim 1 or 2 wherein the herpes virus is HSV-1, HSV-2, HCMV, VZV, EBV, or HHV-8.

4. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a wild type HSV-1,

b) measuring IC_{50} of the same compound that inhibits a binding domain mutant HSV-1 which is the same strain as the wild type herpes virus,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step b is at least 3 times greater than the IC_{50} of step a.

5. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a binding domain mutant HSV-1,

b) measuring IC_{50} of the same compound that inhibits a wild type herpes virus which is the same strain as the mutant HSV-1,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step a is at least 3 times greater than the IC_{50} of step b.

6. The method of claim 4 or 5 wherein HSV-1 is HSV-1 KOS, HSV-1 F, HSV-1 DJL or HSV-1 Patton.

7. The method of claim 5 or 6 wherein the mutation of a wild type herpes virus to mutant herpes virus is at amino acid 823 from valine to alanine.

8. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a wild type HSV-2,

b) measuring IC_{50} of the same compound that inhibits a binding domain mutant HSV-2 which is the same strain as the wild type herpes virus,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step b is at least 3 times greater than the IC_{50} of step a.

9. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a binding domain mutant HSV-2,

b) measuring IC_{50} of the same compound that inhibits a wild type herpes virus which is the same strain as the mutant HSV-2,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step a is at least 3 times greater than the IC_{50} of step b.

10. The method of claim 8 or 9 wherein HSV-2 is HSV-2 MS, HSV-2 35D, or HSV-2 186.

11. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a wild type HCMV,

b) measuring IC_{50} of the same compound that inhibits a binding domain mutant HCMV which is the same strain as the wild type herpes virus,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step b is at least 3 times greater than the IC_{50} of step a.

12. A method of selecting compounds that inhibit herpes viruses comprising:

a) measuring IC_{50} of a compound of interest that inhibits a binding domain mutant HCMV,

b) measuring IC_{50} of the same compound that inhibits a wild type herpes virus which is the same strain of the mutant HCMV,

c) comparing IC_{50} of step a with IC_{50} of step b; and

d) selecting the compound of interest wherein the IC_{50} of step a is at least 3 times greater than the IC_{50} of step b.

13. The method of claim 8 or 9 wherein HCMV is AD169.

14. The methods of claims 1, 4, 8, or 11 wherein IC_{50} of step b is at least 5 times greater than the IC_{50} of step a.

15. The methods of claims 2, 5, 9, or 12 wherein IC_{50} of step a is at least 5 times greater than the IC_{50} of step b.

16. A method for selectively treating diseases caused by herpes viruses in a human host comprising administering a compound to a human in need of such treatment wherein said compound inhibits herpes viruses by interaction with the binding domain in the viral DNA polymerase.

17. A method for selectively inhibiting herpes viruses in a human host comprising administering a compound to a human in need of such treatment wherein IC_{50} of the compound that inhibits a binding domain mutant herpes virus is at lease 3 times

greater than IC_{50} of the compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes virus.

18. The method of claim 17 wherein IC_{50} of the compound that inhibits a binding domain mutant herpes virus is at lease 5 times greater than IC_{50} of the compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes viruse.

19. The method of claim 17 wherein herpes viruses is HSV-1, HSV-2, HCMV, VZV, EBV, or HHV-8.

20. A compound for treating herpesviral infections in a human host wherein IC_{50} of the compound that inhibits a binding domain mutant herpes virus is at lease 5 times greater than IC_{50} of the compound that inhibits a wild type herpes virus which is the same strain as the mutant herpes virus.

21. A compound for treating herpesviral infections in a human host wherein said compound inhibits the herpesvirus by interacting with the binding domain in the viral DNA polymerase.

22. The herpesviral infection of claim 20 or 21 which is HSV-1, HSV-2, HCMV, VZV, EBV, or HHV-8 infection.

23. A compound for the inhibiting of herpesvirus DNA polymerases wherein passage of a wild type herpes virus in the presence of said compound results a change of the wild type HSV-1 polymerases at amino acid 823 from valine to alanine.

24. A compound for inhibiting herpesvirus DNA polymerases wherein passage of a wild type herpes virus in the presence of said compound results in a change of the wild type HCMV polymerases at amino acid 823 from valine to alanine and at amino acid 824 from valine to leuline.

25. A mutant herpesvirus DNA molecule having a nucleotide sequence selected from a group consisting of SEQ.ID.NO. 1; SEQ.ID.NO. 3; SEQ.ID.NO. 5; SEQ.ID.NO. 7; SEQ.ID.NO. 9; and SEQ.ID.NO. 11.

26. A mutant herpesvirus polymerase amino acid molecule having an amino acid sequence selected from a group consisting of SEQ.ID.NO. 2; SEQ.ID.NO. 4; SEQ.ID.NO. 6; SEQ.ID.NO. 8; SEQ.ID.NO. 10 and SEQ.ID.NO. 12.